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(12) **United States Patent**
Howell et al.

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(54) **AUTOMATIC TEST INSTRUMENT FOR MULTI-FORMAT VIDEO GENERATION AND CAPTURE**

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(73) Assignee: **Advanced Testing Technologies, Inc.**, Hauppauge, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/321,041**

(22) Filed: **May 27, 1999**

Related U.S. Application Data

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(51) **Int. Cl.**[7] **H04N 17/00**

(52) **U.S. Cl.** **348/180**; 348/181

(58) **Field of Search** 348/180, 181, 348/189, 552, 714, 716, 720; 345/904; H04N 17/00

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Primary Examiner—Sherrie Hsia
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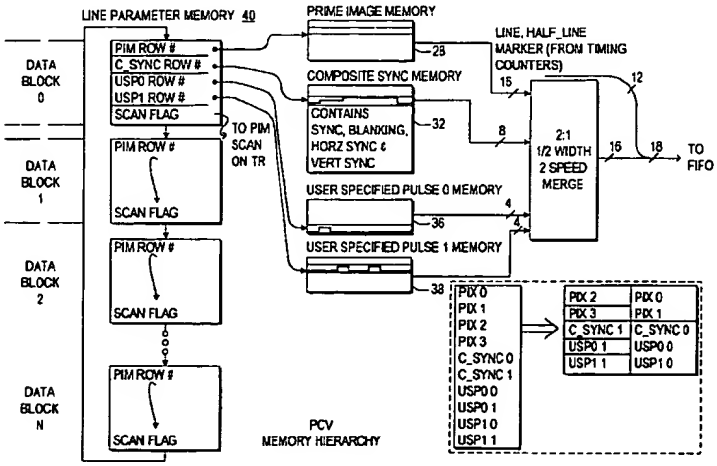
(57) **ABSTRACT**

A method for producing a static composite video signal, e.g., for delivery to a unit under test (UUT), in which a prime image memory (PIM **28**) holding a main bit mapped image is provided, sync and blanking patterns for lines of the video signal being generated are held in a composite sync memory (C-Sync **32**), and a series of arbitrary bit line patterns defined in a test program are held in two user specified pulse memories (USPs **36,38**). Data blocks are arranged in a circular queue in a line parameter memory (LPM **40**), each data block corresponding to a complete video line and containing pointers to specific entries in the PIM (**28**), the C-Sync (**32**) and the USPs (**36,38**) and a flag indicative of scan direction. Production of the video signal is initiated by reading the LPM (**40**)and extracting the pointers from the data blocks for a first line of the video signal being produced. Bits from the PIM (**28**), C-Sync (**32**) and USPs (**36,38**) are obtained based on the extracted pointers and combined to thereby form the video signal. The length of the first line of video signal being produced is monitored to determine when the first line of video is complete, and then production of the video signal is continued line by line in the same manner. Modulated and non-modulated raster video signals can be produced by imposing a deflection waveform on the image. Also disclosed is a method for drawing an image on a screen, three streams of data are created by directing a preload value to a counter (**90**) having memory addresses and using the memory addresses to obtained data from the memory (**92**), each stream of data is converted to an analog signal by means of a respective digital to analog converter (**94a,94b, 94c**), and the analog signals are directed to output channels (**96a,96b,96c**). The three streams of data preferably represent X-deflection data, Y-deflection data and Z-intensity data.

9 Claims, 16 Drawing Sheets



United States Patent [19]

Grothe et al.

[11] **Patent Number: 4,635,050**

[45] **Date of Patent: Jan. 6, 1987**

[54] **DYNAMIC STROKE PRIORITY GENERATOR FOR HYBRID DISPLAY**

[75] Inventors: **Steven P. Grothe, Glendale; Parm L. Narveson, Phoenix, both of Ariz.**

[73] Assignee: **Sperry Corporation, New York, N.Y.**

[21] Appl. No.: **598,563**

[22] Filed: **Apr. 10, 1984**

[51] Int. Cl.[4] **G09G 1/14**

[52] U.S. Cl. **340/734**; 340/701; 340/721; 340/726; 340/739

[58] Field of Search 340/721, 734, 736, 739, 340/745, 729, 701

[56] **References Cited**

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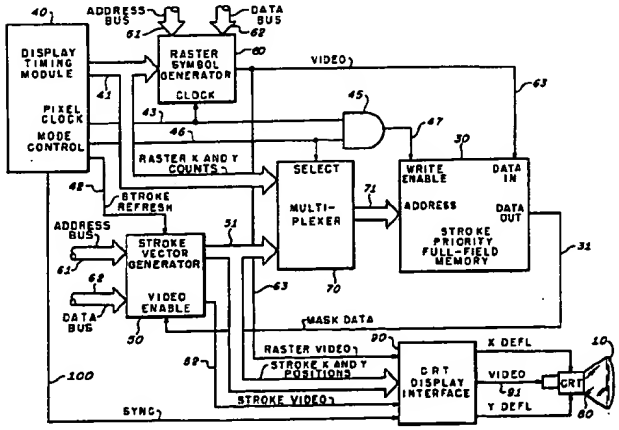
Attorney, Agent, or Firm—Howard P. Terry; Arnold L. Albin

[57] **ABSTRACT**

A cathode ray tube provides a raster can symbol display superimposed on a stroke vector display, with selected regions of the stroke vector display preferentially masked in response to priority instructions. Stroke vector priority data is loaded into a full-field bit-mapped memory by a raster symbol generator and used to provide a stroke vector masking signal in synchronism with the picture elements of the raster scan. The system provides efficient generation of dynamic stroke priority areas by utilizing the repetitive nature of the raster scan to load the stroke priority full-field bit-mapped memory without requiring corresponding processor intervention.

12 Claims, 5 Drawing Figures



United States Patent [19]

Dusard et al.

[11] **4,410,841**

[45] **Oct. 18, 1983**

[54] **ROPING AND MOIRE REDUCTION IN PATTERNED SCREEN CATHODE RAY TUBE DISPLAYS**

[75] Inventors: **Christopher R. Dusard; Thomas W. Spilsbury**, both of Phoenix, Ariz.

[73] Assignee: **Sperry Corporation**, New York, N.Y.

[21] Appl. No.: **306,452**

[22] Filed: **Sep. 28, 1981**

[51] **Int. Cl.**³ **H01J 29/58**

[52] **U.S. Cl.** ..... **315/382**; 315/31 R; 358/161

[58] **Field of Search** ..... 315/382, 31 TV, 31 R; 358/161, 218

[56] **References Cited**

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[57] **ABSTRACT**

In a patterned screen color cathode ray tube (CRT) display, for example, a shadow-mask type color CRT, particularly for use under a wide range of ambient light conditions, such as an aircraft cockpit, incompatibilities between the screen pattern character, the type of writing (such as stroke and raster), and the display linewidth, may result in stroke written lines which appear as a twisted fiber rope and in raster written areas which appear wavy or watery; that is, a moire appearance. Both of these effects vary in accordance with the required display brightness over the ambient light range due to variations in beam or linewidth with corresponding variations in the required cathode drive voltages. These undesirable roping and moire effects are eliminated or substantially eliminated by varying the electron beam focus in accordance with a computed reference brightness compatible with the range of ambient brightnesses in a manner to maintain a predetermined, substantially fixed beam width for stroke written symbols and effective line spacing for raster written symbols.

9 Claims, 6 Drawing Figures